REMARKS

Claims 1-8 and 15-26 are pending in the application. Claims 1-8 and 15-25 are rejected. Claim 26 is objected to. Claim 1 has been amended for clarity. Claim 15 has been amended to correct for dependency. Accordingly, no new matter is submitted with this Reply.

Regarding claim 26, the Examiner states that it is objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form, including all limitations of the base claim and any intervening claims. Independent claim 26 was added in Applicant's 1 July 2004. As that claim was originally in independent form, Applicant asserts that no further amendments are required and the claim is in allowable form.

Reply to the Rejection of Claims 1-8 and 15-25 under 35 U.S.C. § 112, 1st paragraph

The Examiner has rejected claims 1-8 and 15-25 as failing to comply with the written description requirement. Specifically, the Examiner states –

> The specification, as originally filed, provides no basis for "wherein said one or more amide monomer units if [*sic*, is] free of nitrogen linkages linked to the polymer backbone in the side chains" as now recited by instant claim 1.

Applicants respectfully disagree and traverse the Examiner's rejection of claims 1-8 and 15-25 as failing to comply with the written description requirement for the following reasons.

By definition, an amine is a "class of organic compounds of nitrogen that may be considered as derived from ammonia (NH_3) by replacing one or more of the hydrogen atoms with alkyl groups" (Sax, N. Irving *et al.*, HAWLEY'S CONDENSED CHEMICAL DICTIONARY, 11th ed., p. 53, Van Nostrand Reinhold, New York (1987)). The present Specification states "[a]mide monomers useful in the present invention are those **not having** an **amine linkage** in the side chain" (Specification: p. 2, lines 11 and 21-22 (emphasis added)). Therefore, if the present invention is so limited to those amide monomers not having an amine linkage in the side chains, by definition such amide monomers can not have nitrogen linkages in the side chains (in other words, the "one or more amide monomer units is free of nitrogen linkages linked to the polymer backbone in the side chains").

It is believed that these remarks overcome the Examiner's rejection of claims 1-8 and 15-25 as failing to comply with the written description requirement. Withdrawal, therefore, of the rejection of claims 1-8 and 15-25 under 35 U.S.C. § 112, first paragraph is respectfully requested.

Reply to the Rejection of Claim 15 under 35 U.S.C. § 112, 2nd paragraph

The Examiner has rejected claim 1-8 and 15-25 as being indefinite. Specifically, the Examiner states –

> With respect to instant claim 15, it is vague and indefinite in that it is dependent upon canceled claim 14. For purposes of examination, the Examiner has interpreted claim 15 to be dependent upon claim 14. Clarification is required.

Claim 15 has been amended to depend from claim 1. It is believed that these amendments and remarks overcome the Examiner's rejection of claim 15 as being indefinite. Withdrawal, therefore, of the rejection of claim 15 under 35 U.S.C. § 112, second paragraph is respectfully requested.

Reply to the Rejection of Claims 1-8, 15-18 and 20-25 under 35 U.S.C. § 102(b) or 103(a)

The Examiner has rejected Claims 1-8, 15-18 and 20-25 as being anticipated by, or, alternatively, rendered obvious in view of U.S. Patent No. 5,843,192 to Kirk *et al.* ("Kirk"). Specifically, the Examiner states –

> Kirk et al teach a composition useful in a washing process containing at least one vinyl amide polymer. The vinyl amide polymer contains from 5 to 100 weight percent of at least one vinyl amide monomer, and from 0 to 95 weight percent of one or more vinyl ester monomers. Kirk et al also provides a method of cleaning an article and a method of providing soil resistance to an article using the vinyl amide polymer. See Abstract. The vinyl amide polymer preferably contains less than 3 weight percent of one or more ethylenically unsaturated carboxylic acid monomers, based on the total weight of the monomers. The carboxylic acid monomers include acrylic acid, methacrylic acid, maleic acid, itaconic acid, etc. The vinyl amide polymer preferably contains less than 3 weight percent of one or more acrylamide monomers. Suitable acrylamide monomers include acrylamide, N,N-dimethylacrylamide, acrylamidoalkylenesulfonic acid, etc. See column 4, lines 30-50 and claim 1. The cleaning solution may optionally contain additional components such as surfactants, builders, buffering agents, bleaching agents, enzymes, perfumes, etc. See column 5, lines 1-35. The treatment solution is contacted with the article by immersing the article with the solution. See column 6, lines 25-45.

> Specifically, Kirk et al teach a composition containing 8% linear alkyl benzene sulfonate, 16% alcohol ether sulfate, 6% nonionic surfactant, 0.5% enzyme, 2% vinyl amide polymer, etc. See column 14, lines 50-69. Note that, the Examiner maintains that the vinyl amide polymer would inherently have the same mole percent of amide monomer as recited by the instant claims. Accordingly, the broad teachings of Kirk et al are sufficient to anticipate the material limitations of the instant claims.
>
> Alternatively, even if the broad teaching of Kirk et al are not sufficient to anticipate the material limitations of the instant claims, it would have been nonetheless obvious to one of ordinary skill in the art to arrive at the claimed mole percent of amide polymer of the composition in order to provide the optimum soil resistant properties to the composition since Kirk et al teach that the amount and type of amide used in formulating the resultant polymer may be varied. . . .
>
> . . . With respect to Kirk et al, Applicant states that unlike the vinyl aminde (*sic*, amide) monomers of Kirk et al, the amide monomers as recited by the instant claims have no nitrogen linked to the polymer backbone in the side chain. First, as stated previously, the Examiner sees no distinction between the polymers of Kirk et al and those recited by the instant claims. Note that, clearly nitrogens can be present in the polymer backbone as indicated by instant claim 2 in which it states "wherein said amide monomer has at least one amide moiety in the polymer backbone. . . ." The amide monomer as taught by Kirk et al does contain a nitrogen but this would be in the polymer backbone as recited by instant claim 2. Additionally, claim 1 recites an amide monomer unit in the polymer which would have a nitrogen atom as a repeating unit which would not be considered in the side chain.
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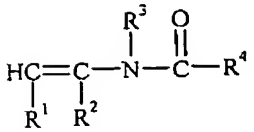
> Additionally, Applicant states that Example 13 of the present description illustrates use of the polymer according to the present invention in acidic and alkaline hard surface cleaning formulations and that polyvinyl amide polymer such as those taught by Kirk et al will hydrolyze to polyvinyl amine under these pH conditions. In response, note that, nothing in the instant claims presents a limitation relating to pH or hydrolysis; The Examiner maintain that the polymers as taught by Kirk et al fall within the scope of the instant claims.

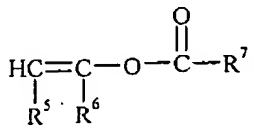
For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 1-4, 6-8 and 20-25 as being anticipated by Kirk.

As previously indicated, Kirk teaches a composition useful in a washing process containing at least one vinyl amide polymer having 5-100 weight % of at least one vinyl amide monomer, and 0-95 weight % of one or more vinyl ester monomers, and at least one additive (Abstract; col. 2, lines 28-49). The at least one vinyl amide polymer required in the composition of Kirk is formed from, as polymerized units, at least one vinyl amide monomer of the formula –



(col. 3, lines 12-33; claim 1). Preferably the vinyl amide polymer is formed from 5 to 100 weight percent of the above vinyl amide monomer (col. 3, lines 37-41). Examples of such vinyl amide monomer include N-vinyl formamide, N-vinyl acetamide, N-vinyl-N-methyl acetamide or combinations thereof (col. 3, lines 34-36).

In addition to the above vinyl amide monomer, the vinyl amide polymer can optionally be formed from, as polymerized units, one or more vinyl ester monomers of the following formula –

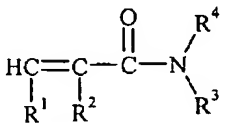


(col. 3, lines 42-57). Preferably the vinyl amide polymer is formed from 0 to 95 weight percent of the above vinyl ester monomer (col. 3, lines 61-65). Examples of such vinyl ester monomer include vinyl acetate, vinyl propionate, vinyl pivalate, vinyl laurate, vinyl decanoate or combinations thereof (col. 3, lines 58-60).

The vinyl amide polymer can also be formed from one or more **optional** ethylenically unsaturated monomers. Preferably the vinyl amide polymer is formed from 0 to 50 weight percent of these ethylenically unsaturated monomers (col. 3, line 66 – col. 4, line 25).

The vinyl amide polymer can also be formed so that it contains less than three (3) weight percent (most preferably 0 to 0.5 weight percent) of one or more **optional** ethylenically unsaturated carboxylic acid monomers, such as acrylic acid, methacrylic acid, maleic acid, itaconic acids and salts thereof (col. 4, lines 26-38; claim 1).

The vinyl amide polymer can also be formed so that it contains less than three (3) weight percent (most preferably 0 to 0.5 weight percent) of one or more **optional** acrylamide monomers of the formula –

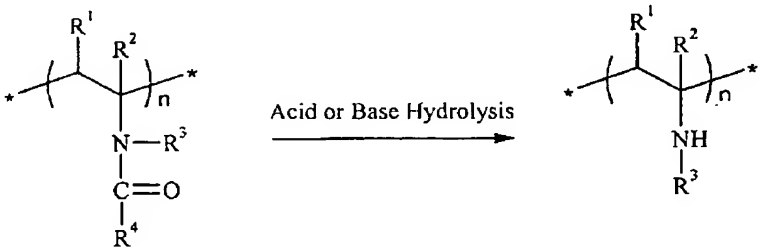


(col. 4, lines 39-55; claim 1). Examples of such acrylamide monomers include N,N-dimethyl acrylamide. (In contrast, see Example 1 of the present description wherein the N,N-dimethyl acrylamide is present in the polymer in an amount of 90%.)

Only polymers formed from N-vinyl formamide (NVF) (20 to 100 weight percent of the polymer) and vinyl acetate (VA) (0 to 80 weight percent), or N-vinyl-N-methyl acetamide (NVA) (20 to 50 weight percent) and VA (50 to 80 weight percent) are exemplified, ranging in molecular weight from 24,000 to 117,000 (see vinyl amide polymer Examples 1-7, Tables 1-8 of Kirk).

Kirk teaches a washing composition that includes the above vinyl amide polymer in a weight percentage of 0.01 to 20 weight % of the composition (col. 7, lines 22-29) (only 2.0 weight % exemplified, Tables 5 and 6). The vinyl amide polymer is formed from the above described monomers in the weight percentages provided. The washing composition also includes at least one additive selected from a surfactant, a fabric softening agent or combinations thereof. The washing composition can further optionally include other additives, for examples, builders such as citric acid, and bleaching agents such as perborates, percarbonates or chlorine-generating substances (col. 7, line 30 – col. 9, line 43).

As previously stated, and here again for emphasis, it is well known that vinyl amide based polymers such as the required vinyl amide polymers of Kirk easily hydrolyze under both acid and base conditions as follows –



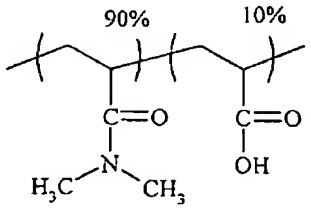
For example, polyvinyl formamide (a polyvinyl amide) is known to readily hydrolyze to polyvinyl amines in acidic or basic solution (*see*, Stinson, Stephen, *Quest for commercial polyvinylamine advances*, CHEMICAL & ENGINEERING NEWS, p. 32, Sep. 6, 1993 (stating that "polyvinylformamide is readily hydrolyzed to [polyvinyl amine] in acidic or basic solution")). N-ethyl formamide is also known to readily hydrolyze under such conditions (*see*, Badesso, R.J. *et al.*, *Synthesis of Amine Functional Homopolymers with N-Ethenylformamide*, POLYMER

PREPRINTS, vol. 34, pp. 251-52 (1993) (stating that a "particular advantage of [N-ethenyl formamide] is the ease of hydrolysis of its polymers"); *see also*, Badesso, R.J. *et al.*, *High and Medium Molecular Weight Poly(vinylamine)*, POLYMER PREPRINTS, vol. 32, pp. 110-11 (1991)) . Col. 3, lines 34-36 of Kirk indicates that N-vinyl formamide (NVF, Examples 1-4 and 7 of Kirk) is an example of its **required** vinyl amide monomers. As such, this hydrolysis is recognized as a commercial route to polyvinyl amine.

Most cleaning compositions or formulations contain either an acid or a base. As shown above, the washing composition of Kirk can include acidic builders and/or alkaline bleaching agents. The above hydrolysis information indicates that polyvinyl amide polymers such as those described in Kirk will hydrolyze in these cleaning formulations during storage and in end use, losing performance over time.

Further, Kirk does not teach or suggest vinyl amide polymers free of nitrogen linkages linked to the polymer backbone in the side chains.

In contrast to Kirk, the amide polymers of the present invention are attached to the polymer backbone by a carbonyl group (C=O) and not by the nitrogen linkages as is the case with polyvinyl amide polymers. For example, the following illustrates an amide polymer according to the present invention (exemplified in Example 1 of the present description) –



Example 1 - copolymer of N,N-dimethyl acrylamide (90 mole %) and acrylic acid (10 mole %)

As shown above, because the amide polymers of the present invention are not attached to the polymer backbone by nitrogen linkages (in contrast to vinyl amide polymers such as is taught by Kirk), they are subject to the relatively facile hydrolysis that polyvinyl amide polymers such as the vinyl amide polymers of Kirk undergo. As such, the amide polymers of the present invention do not lose performance during storage or in the washing process.

Example 13 was referred to in Applicant's 1 July 2004 Reply simply to illustrate both acidic and alkaline formulations that the presently claimed polymer remains stable in, but would

result in hydrolysis of a polymer according to Kirk. The presently claimed polymer is limited to amide polymers that do not have nitrogen linkages linked to the polymer backbone in the side chains. Kirk requires that at least 5 weight percent of its polymer include a vinyl amide monomer, which would result in an amide polymer having nitrogen linkages linked to the polymer backbone in the side chains.

Regarding the Examiner's remark that "the vinyl amide polymer would inherently have the same mole percent of amide monomer as recited by the instant claims", Applicant respectfully disagrees. Kirk states that its vinyl amide polymer "is formed from 5 to 100 weight percent, preferably from 15 to 70 weight percent, and most preferably 20 to 40 weight percent of the vinyl amide monomer [of Formula (I)] based on the total weight of monomer used to form the vinyl amide polymer" (col. 3, lines 37-41). This required vinyl amide monomer used in forming the polymer does not include the optional ethylenically unsaturated carboxylic acid monomers (such as acrylic acid) or the optional acrylamide monomers (such as N,N-dimethylacrylamide) (see col. 4, lines 33-55 of Kirk).

As claimed, the amide monomer(s) of the present invention is free of amine linkages linked to the polymer backbone in the side chains. The less than 3 weight percent of acrylamide monomers used to form the vinyl amide polymer according to Kirk is not equivalent to the 5 to 100 weight percent of amide monomer units without an amine linkage to the polymer backbone as claimed in claim 1 of the present invention.

Unlike the vinyl amide monomers of Kirk, the amide monomers of the present invention are free of nitrogen linkages in the side chain. Accordingly, as Kirk does not teach or suggest a polymer comprising an amide monomer free of nitrogen linkages linked to the polymeric backbone and in an amount of at least five mole percent, Kirk cannot be said to anticipate the present surface protection composition.

It is believed that these remarks overcome the Examiner's rejection of claims 1-8, 15-18 and 20-25 as being anticipated by Kirk under 35 U.S.C. § 102(b) or, alternatively, rendered obvious in view of Kirk under 35 U.S.C. § 103(a). Withdrawal of the rejection is respectfully requested.

Based on the above amendments and remarks, allowance of the claims is believed to be in order, and such allowance is respectfully requested.

Respectfully submitted,

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